



SEQUENCE LISTING

<1> ~~Patent~~ niell, Henry

<120> Pharmaceutical Proteins, Human Therapeutics, Human Serum Albumin
Insulin, Native Cholera Toxic B Submitted on Transgenic Plastids

<130> CHL-T104XC1

<140> US 09/807,742

<141> 2001-04-18

<150> PCT/US01/06288

<151> 2001-02-28

<160> 26

<170> PatentIn version 3.2

<210> 1

<211> 1250

<212> PRT

<213> Artificial sequence

<220>

<223> Protein-based polymer (PBP) made from synthetic genes.

<400> 1

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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 115 120 125

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 130 135 140

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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 195 200 205

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
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Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
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Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 340 345 350

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 370 375 380

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 420 425 430

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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 580 585 590

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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
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 675 680 685

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Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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 725 730 735

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 740 745 750

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 755 760 765

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Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
785 790 795 800

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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
820 825 830

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835 840 845

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
850 855 860

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
865 870 875 880

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885 890 895

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900 905 910

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915 920 925

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930 935 940

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
945 950 955 960

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965 970 975

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980 985 990

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995 1000 1005

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1025						1030					1035			
Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly
1040						1045					1050			
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1055						1060					1065			
Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly	Val	Pro	Gly	Val	Gly
1070						1075					1080			
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1085						1090					1095			
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1100						1105					1110			
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1115						1120					1125			
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1130						1135					1140			
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1145						1150					1155			
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1160						1165					1170			
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1175						1180					1185			
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1190						1195					1200			
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1205						1210					1215			

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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
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Val Pro
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<220>
<223> Illustrative endoplasmic reticulum retention signal

<400> 2

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<210> 3
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<212> PRT
<213> Artificial sequence

<220>
<223> Illustrative peptide

<400> 3

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<220>
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25

<210> 5
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<212> DNA
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<223> Primer

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gcccatggta aaatcttggt ttattta

27

<210> 6
<211> 28
<212> DNA
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<220>
<223> Primer

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28

<210> 7
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<212> DNA
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<400> 9

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1 5

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<223> Illustrative peptide (cleavage site recognized for TEV protease)

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Glu Asn Leu Tyr Phe Gln Gly
1 5

<210> 11

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<223> Cleavage site recognized by Thrombin

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<210> 12

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<223> 6-His tag

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His His His His His His
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<210> 13

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<213> Artificial Sequence

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<223> PCR primer 3P

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<210> 14

<211> 25

<212> DNA

<213> Artificial Sequence

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<223> PCR primer 3M

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ccgcgttggtt tcacaaagcc ttacg

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<400> 15

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Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val
 35 40 45

Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro
 50 55 60

Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile
 65 70 75 80

Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val
 85 90 95

Gly Ile Val Pro Gly Val Gly Ile Val Pro Gly Val Gly Ile Val Pro
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Gly Val Gly Ile Pro Gly Val
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 <212> DNA
 <213> Homo sapiens

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 cagggtggagc tgggcggggg ccctggtgca ggcagcctgc agcccttggc cctggagggg 180
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 ctggagaact actgcaacta 260

<210> 17
 <211> 260
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Chloroplast modified proinsulin sequence

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 caagtagaat taggtgggtg tcttggtgct ggttctttac aacctttagc tttagaaggt 180
 tctttacaaa aacgtgggtat tgtagaacia tgttgactt ctatttggtc tttataccaa 240
 ttagaaaaact actgtaacta 260

<210> 18
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 <212> DNA
 <213> Homo sapiens

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 acaggcatcg tggatgagtg ctgcttccgg agctgtgac taaggaggct ggagatgtat 180
 tgcgcacccc tcaagcctgc caagtcagct 210

<210> 19
 <211> 210
 <212> DNA
 <213> Homo sapiens

<400> 19
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<223> Protein-based polymer (PBP) made from synthetic genes

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Gly Val Gly Val Pro
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<210> 21

<211> 605

<212> PRT

<213> Artificial Sequence

<220>

<223> Protein-based polymer (PBP) made from synthetic genes.

<400> 21

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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
115 120 125

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
130 135 140

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
145 150 155 160

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
 165 170 175

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 180 185 190

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 195 200 205

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 210 215 220

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 225 230 235 240

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
 245 250 255

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 260 265 270

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 275 280 285

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 290 295 300

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 305 310 315 320

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 325 330 335

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 340 345 350

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 355 360 365

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 370 375 380

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 385 390 395 400

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
 405 410 415

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 435 440 445

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 450 455 460

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 465 470 475 480

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
 485 490 495

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 500 505 510

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 515 520 525

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 530 535 540

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 545 550 555 560

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 580 585 590

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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 <212> PRT
 <213> Artificial Sequence

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<223> Protein-based polymer (PBP) made from synthetic genes.

<400> 22

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 20 25 30

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
 85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 115 120 125

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 130 135 140

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 145 150 155 160

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
 165 170 175

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 180 185 190

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 195 200 205

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 210 215 220

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
 225 230 235 240

Gly Val Gly Val Pro Gly Val Gly Val Pro
 245 250

<210> 23
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> RBS sequence

<400> 23

Gly Ala Ala Gly Gly Ala Gly
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<210> 24
 <211> 200
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Protein-based polymer (PBP) made from synthetic genes.

<400> 24

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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
 20 25 30

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
 35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
 50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
85 90 95

Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
100 105 110

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
115 120 125

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
130 135 140

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
145 150 155 160

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
180 185 190

Gly Val Pro Gly Val Gly Val Pro
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<210> 25
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<223> Protein-based polymer (PBP) made from synthetic genes.

<400> 25

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Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
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Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
35 40 45

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
50 55 60

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
65 70 75 80

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
85 90 95

Val Gly Val Pro
100

<210> 26
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<212> PRT
<213> Artificial Sequence

<220>
<223> Chloroplast preferred Ribosome Binding Site (RBS) Shine-Dalgarno
sequence

<400> 26

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